

ORIGIN OF THE DRIFTWOOD ON THE COASTS OF ICELAND; A DENDROCHRONOLOGICAL STUDY

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ABSTRACT

In many places along the extensive coastline of Iceland driftwood has been washed ashore over a long period of time. Although the amount of driftwood varies from place to place it is found on almost every beach along the coast. The wood originates in the boreal forest regions of Russia/Siberia. Rivers which drain these forested areas carry driftwood into the Arctic Ocean, where it is caught in drifting ice and transported by the oceanic currents.

A total of 343 samples of driftwood were collected from 3 areas in Iceland and analysed by wood anatomical- and dendrochronological methods, aimed at identifying the origin and age of the wood. A total of 24% of the Picea samples and 5% of the Pinus samples could be directly dated via tree-ring chronologies from the White Sea region in western Russia. Additionally 54% of the Pinus samples could be grouped together into a mean curve, that could be dated via tree-ring chronology from the middle drainage area of the Yenisey river in Siberia. At present most of the Pinus and Picea driftwood reaching Iceland are logs that came loose during timber floating on the Russian/Siberian rivers, whereas most of the Larix driftwood has a "natural" origin, with their root system preserved. Although North American driftwood has been found in East Greenland it has not been encountered in Iceland, which suggests a partly different origin for the ice drifting south in the western and eastern parts, respectively, of the East Greenland Current. Because of the relatively short buoyancy time of the driftwood - most of its travel must have taken place

frozen in sea ice - it can be concluded that some of the drift-ice reaching Iceland has the same origin as the driftwood i.e. the Barents and Siberian seas. The youngest dated sample indicates that it is possible for arctic driftwood to reach the coasts of Iceland in less than six years.

INTRODUCTION

Iceland is situated at the boundary between Arctic and Atlantic waters. The south coast is affected by the warm and saline Atlantic water from the Gulf Stream which flows along the west coast where it branches into two parts, one that turns westward making a circular current in the Irminger Sea, and another that turns to the east along the north coast, mixing with a branch of the East Icelandic Current (Figure 1).

Sharp boundaries occur between the warm and cold water off the south east coast and these are even sharper in the north west, between the warm Atlantic water and the polar waters of the East Greenland Current (Stefánsson, 1961). The Irminger Current is the branch of the North Atlantic Drift that flows in a clockwise direction around Iceland (Figure 1). In cold years, the East Greenland Current can block off the surface water of the Irminger Current at the north-western peninsula, causing the north and east coasts to be dominated by the cold Arctic surface water (Stefánsson, 1962). When this happens, drifting sea ice is common at the north coast. The east coast of Greenland is affected by the East Greenland Current (Figures 1 and 2), which brings drift ice along the coast throughout the year and may bring driftwood from the Arctic